MASS-POWER OUTAGE IN DISASTERS:
ADDRESSING INEFFICIENCIES IN FEMA'S GENERATOR MISSION

by
Peter Danjczek

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Table of Contents

List of Figures

TO: Robert J. Fenton, Deputy Associate Administrator for the Office of Response and Recovery, FEMA

FROM: Peter Danjczek, External Affairs Advisor, Response Directorate, FEMA

DATE: December 1, 2014

RE: Assessing FEMA's Generator Program

I. ACTION FORCING EVENT:

The Federal Emergency Management Agency (FEMA) has made significant progress in its ability to "support our citizens and first responders to ensure that as a nation we work together to build, sustain, and improve our capability to prepare for, protect against, respond to, recover from, and mitigate all hazards,"[1] particularly since the shortfalls of Hurricane Katrina and the challenges faced in Hurricane Sandy. However, in the *FEMA Strategic Plan 2014-2018* released in July 2014, FEMA has challenged itself to further advance by "institutionalizing key improvements while building Agency capacity and strengthening national capabilities for disaster preparedness."[2] The strategic plan includes five strategic priorities: 1. Be survivor-centric in mission and program delivery; 2. Become an expeditionary organization; 3. Posture and build capability for catastrophic disasters; 4. Enable disaster risk reduction nationally; and 5. Strengthen FEMA's organizational foundation; all of which incorporate FEMA's two strategic

[1] United States. Federal Emergency Management Agency. *About FEMA.* August 14, 2014. Accessed August 14, 2014. http://www.fema.gov/about-fema.
[2] United States. Federal Emergency Management Agency. *FEMA Strategic Plan 2014-2018.* July 18, 2014. Accessed August 1, 2014. https://s3-us-gov-west-1.amazonaws.com/dam-production/uploads/1405716454795-3abe60aec989ecce518c4cdba67722b8/July18FEMAStratPlanDigital508HiResFINALh.pdf.

imperatives, "A Whole Community[3] Approach to Emergency Management" and "Foster Innovation and Learning."[4]

As a supporting senior executive to the development of FEMA strategic priorities two and three, FEMA's Region III Administrator met with FEMA's Deputy Administrator and the Deputy Associate Administrator for the Office of Response and Recovery (ORR) to discuss concerns that the installation of generators at critical facilities in the wake of disasters takes longer than is acceptable, and requested that FEMA leadership seek a means for expediting this process. Following the initial discussion, I was tasked with identifying potential solutions to this issue. However, while the initial direction that I was given asked that I present a proposal for expediting the installation of generators at critical facilities, it was determined that a broader scope than the original intent of the tasking is required to address the primary issues facing FEMA's generator mission. This memorandum explains the issues with FEMA's generator mission, provides the history and background of the issues, presents the policy and political considerations, and recommends a course of action to improve FEMA's generator mission.

II. STATEMENT OF THE PROBLEM:

FEMA must be prepared to provide backup power to critical facilities in disasters, especially in catastrophic events that disrupt the energy sector. This is significant to acknowledge as Presidential Policy Directive (PPD)-21, released in February 2013, designates energy and power as "uniquely critical due to the enabling functions they

[3] Whole Community emphasizes that everyone from individual citizens to the federal government, including all sectors and jurisdictions, are critical to ensuring that the Nation is prepared for all-hazards.
[4] United States. Federal Emergency Management Agency. *FEMA Strategic Plan 2014-2018*. July 18, 2014.

provide across all critical infrastructure sectors."[5] This issue is amplified by the upward trend in the frequency of severe weather which will continue to significantly disrupt the Nation's electric power infrastructure.[6]

Recognizing that severe weather will occur more frequently in the future, FEMA must ensure the success of its generator mission. FEMA is responsible for fulfilling generator requirements by providing the capability, the generators, and the capacity, the number of generators, that are anticipated to be required in a disaster. However, after analyzing historical data on the number of requested, deployed, and installed generators from 2011 to 2014,[7] it appears that the issues with FEMA's generator mission are broader than the original intent of this memorandum, to offer courses of action to expedite the installation of generators at critical facilities in response to disasters.

Of the 1,699 generators deployed to disasters between the years 2011 to 2014, the average percentage of generators installed has been 12.71 percent, with only 216 of the 1,699 generators deployed actually having been installed. The 12.71 percent installation (utilization) rate indicates that FEMA does not appear to be using accurate data to inform its decisions to acquire and deploy generators. This creates an inefficient use of time and money, and indicates that FEMA's generator cache is not based on an accurate estimation of anticipated requirements for responding to disasters as FEMA acquires, stores, maintains, and deploys generators that are not subsequently installed or utilized.

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[5] United States, The White House, *Presidential Policy Directive -- Critical Infrastructure Security and Resilience,* February 12, 2013, accessed February 20, 2014, http://www.whitehouse.gov/the-press-office/2013/02/12/presidential-policy-directive-critical-infrastructure-security-and-resil.

[6] United States, Federal Emergency Management Agency, *Toward More Resilient Futures: Putting Foresight Into Practice* (Washington, DC, 2013).

[7] Sample size for historical data was conducted by U.S. Army Corps of Engineers and FEMA as briefed at the Senior Leadership Summit on May 22, 2014. United States. US Army Corps of Engineers. *Senior Leaders' Seminar*. p. 5, Washington, DC, 2014.

Addressing this issue is complex. It is the responsibility of the states to self-identify critical facilities within their borders and the federal government has no direct authority or oversight over the designation of critical facilities. As responsibility for this mission is shared by federal, state, local, tribal, and territorial (SLTT) jurisdictions as well as by the public, private, and non-profit sectors, addressing this issue will require a coordinated effort across the Whole Community. Consequently, any course of action that addresses this issue will require a coordinated effort across multiple levels of government and sectors.

III. HISTORY:

In the United States, states have autonomy from the federal government in their authority to respond to disasters within their respective state borders. Therefore, except in the case of a catastrophic incident in which a state government may be so debilitated that it can no longer effectively respond on its own, the federal government has no authority to assume operational control over the response to a disaster within a state. However, when a state's capacity to respond to a disaster is exhausted, the state may request assistance from the federal government, and the President can approve or deny the request for assistance through an emergency or disaster declaration, known in short as a Presidential declaration.[8] When a disaster warrants a Presidential declaration, the federal government responds through a coordinated effort led by FEMA. In this section, the description of the Disaster Relief Acts and the implementing and corresponding Executive Orders and Directives provide a context for understanding that FEMA

[8] States, territories, and federally recognized tribes request federal disaster assistance through the declaration process that includes emergency and disaster declarations.

possesses a broad spectrum of disaster preparedness and response authorities that can be utilized to meet the goal of improving the generator mission in disasters.

The Stafford Act

The Robert T. Stafford Disaster Relief and Emergency Assistance Act of 1988 (Stafford Act) [9] serves as the primary authority for the federal government to respond to domestic disasters. As described in the National Incident Support Manual, the Stafford Act "authorizes the programs and processes by which the federal government provides disaster and emergency assistance to SLTT governments, eligible private nonprofit organizations, and individuals affected by a declared major disaster or emergency… [and] covers all hazards, including natural disasters and terrorist events."[10] The Stafford Act also provides "an orderly and continuing means of assistance by the federal government to state and local governments in carrying out their responsibilities to alleviate the suffering and damage which result from such disasters."[11]

Further, the Stafford Act provides the President with the authority to "…direct any federal agency… to utilize its authorities and the resources granted to it under federal law (including personnel, equipment, supplies, facilities, and managerial, technical, and advisory services) in support of state and local assistance response and recovery efforts, including precautionary evacuations; [and] coordinate all disaster relief assistance

[9] *Robert T. Stafford Disaster Relief and Emergency Assistance Act*, Pub. L. No. 93-288 (as amended at 42 U.S.C. §§ 5121-5207).
[10] United States, Federal Emergency Management Agency, *National Incident Support Manual,* p.133, February 2011, accessed February 20, 2014, http://www.fema.gov/media-library-data/20130726-1821-25045-8641/fema_national_incident_support_manual_03_23_2011.pdf.
[11] 42 U.S.C. § 5121(b).

(including voluntary assistance) provided by federal agencies, private organizations, and State and local governments."[12]

Following the passage of the Stafford Act, President Reagan issued EO 12656: Assignment of Emergency Preparedness Responsibilities, which assigns national security emergency preparedness responsibilities to federal agencies. This EO defines a national security emergency as "any occurrence, including natural disaster, military attack, technological emergency, or other emergency, that seriously degrades or seriously threatens the national security of the United States."[13]

Homeland Security Act of 2002

The Department of Homeland Security (DHS) was created by the Homeland Security Act (HSA)[14] in 2002, which consolidated various agencies, including FEMA, into one department. The HSA states that the mission of DHS is in part to "minimize the damage, and assist in the recovery, from terrorist attacks that do occur within the United States; [and to] carry out all functions of entities transferred to the Department, including by acting as a focal point regarding natural and manmade crises and emergency planning."[15] While the responsibility for the overall coordination of natural and manmade disasters and emergency planning was originally given to FEMA, the responsibility was transferred to DHS by EO 13286 in 2003 following the passage of the HSA, but was delegated back to FEMA in 2010 by DHS Delegation 9001.1.

[12] 42 U.S.C. § 5170(a)(1) – (2).
[13] *EO 12656 Assignment of Emergency Preparedness Responsibilities*, 43 FR 47491, November, 18, 1988.
[14] *Homeland Security Act of 2002*, Pub. L. No. 107-296 (codified as amended at 6 U.S.C. §§ 101-1405).
[15] 6 U.S.C. § 111 (b)(1)(A).

Post-Katrina Emergency Management Reform Act of 2006

The Post-Katrina Emergency Management Reform Act (PKEMRA) [16] was signed into law in 2006 to address the weaknesses experienced in the response to Hurricane Katrina. Important to FEMA's role, PKEMRA "enhanced FEMA's responsibilities and its autonomy within DHS. Per PKEMRA, FEMA is to lead and support the Nation in a risk-based, comprehensive emergency management system of preparedness, protection, response, recovery, and mitigation. Under the Act, FEMA is made a distinct entity within DHS, and the Secretary of Homeland Security can no longer substantially or significantly reduce the authorities, responsibilities, or functions of FEMA—or the capability to perform them."[17]

Presidential Policy Directive (PPD)-8

In 2011, President Obama issued PPD-8: National Preparedness to improve the federal government's system for responding to disasters, placing an emphasis on the inclusion of the Whole Community. This changed the way the federal government prepares for and responds to disasters by requiring that its efforts incorporate every level of government and all sectors, as well as all individuals, "in a systematic effort to keep the nation safe from harm and resilient when struck by hazards, such as natural disasters, acts of terrorism and pandemics… [and] calls on federal departments and agencies to work with the Whole Community to develop a national preparedness goal and a series of

[16] *Post-Katrina Emergency Management Reform Act (PKEMRA) of 2006*, Pub. L. No. 109-295.
[17] United States, Federal Emergency Management Agency, *National Incident Support Manual,* p.133.

frameworks and plans related to reaching the goal… [b]ecause when it comes to national preparedness, every sector and individual has a role to play."[18]

An important element of PPD-8 is the National Planning Frameworks, under which the National Response Framework (NRF) was created. The National Planning Frameworks define how the Nation works together "to best meet the needs of individuals, families, communities, and states in their ongoing efforts to prevent, protect, mitigate, respond to and recover from any disaster event."[19] The second edition of the NRF was released in 2013 to emphasize the integration of the Whole Community by "describe[ing] the important roles of individuals, families and households in response activities" [20] and to stress the importance of the coordinating roles of the 14 Emergency Support Functions (ESFs).

The ESFs are comprised of departments and agencies with particular authorities, resources, capabilities, and expertise to coordinate sector specific disaster response actions. Each ESF is assigned primary and coordinating agencies that lead the ESF, and also designates various support agencies. The primary and coordinating agencies are responsible for the coordination of all tasks listed in their specific ESF annexes.[21]

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[18] United States, Federal Emergency Management Agency, *National Response Framework,* February 3, 2014, accessed April 28, 2014, http://www.fema.gov/national-response-framework.
[19] United States, Federal Emergency Management Agency, *Learn about Presidential Policy Directive-8,* February 21, 2014, accessed April 28, 2014, https://www.fema.gov/learn-about-presidential-policy-directive-8.
[20] United States, Federal Emergency Management Agency, *National Response Framework,* February 3, 2014.
[21] United States, Federal Emergency Management Agency, *National Preparedness Resource Library,* February 21, 2014, accessed May 01, 2014, http://www.fema.gov/national-preparedness-resource-library. The 14 ESFs include The 14 ESFs include: *ESF #1 – Transportation, ESF #2 – Communications, ESF #3 - Public Works and Engineering, ESF #4 – Firefighting, ESF #5 - Information and Planning, ESF #6 - Mass Care, Emergency Assistance, Temporary Housing and Human Services, ESF #7 – Logistics, ESF #8 - Public Health and Medical Services, ESF #9 - Search and Rescue, ESF #10 - Oil and Hazardous Materials, ESF #11 - Agriculture and Natural Resources, ESF #12 – Energy, ESF #13 - Public Safety and Security, and ESF #15 - External Affairs.* ESF #14 was removed from the NRF and is now found in the National Disaster Recovery Framework (NDRF).

ESF #7 – FEMA's Generator Cache

While ESF #7 in responsible for logistics in disasters, the acquisition, storage, maintenance, and deployment of FEMA generators are guided by policy under FEMA's Office of Response and Recovery. FEMA has acquired several different types and sizes of generators throughout the Agency's existence. FEMA currently has 1,012 generators in its fleet comprised of 103 different generator sizes, "ranging from 1.5KW… to 1.825MW."[22] The age of these generators range from 5 to 30 years old."[23] Additionally, the cache is comprised of generators from "23 different manufacturers."[24]

ESF #3 –US Army Corps of Engineers

While FEMA is responsible for setting policies that guide the generator mission, and the Department of Energy (DOE) coordinates overall energy issues through ESF #12, ESF #3, for which the US Army Corps of Engineers (USACE) is the primary and coordinating agency, is responsible for the 'infrastructure systems' core capability including "providing temporary emergency power to critical facilities (e.g., hospitals, water treatment plants, shelters, fire/police stations)."[25] ESF #3 is also responsible for the 'public and private services and resources' core capability that includes "execut[ing] emergency contracting support for infrastructure related to life-saving and life-sustaining services to include providing potable water, emergency power, and other emergency

[22] United States. US Army Corps of Engineers. *Senior Leaders' Seminar*. p. 5, Washington, DC, 2014.
[23] Ibid.
[24] Ibid.
[25] United States, Federal Emergency Management Agency, *Emergency Support Function #3 – Public Works and Engineering Annex,* May 2013, accessed March 10, 2014, http://www.fema.gov/media-library-data/20130726-1921-25045-7868/final_esf_3_public_works_and_engineering_20130501_r1.pdf., p.3.

commodities and services."[26] Additionally, though coordinated in practice through ESF #3, the ESF #12 Annex also states that USACE is responsible for "power system stabilization and reestablishment activities to establish priorities for emergency generator installation" as well as "assisting in reestablishing the energy infrastructure."[27] These responsibilities designated in the ESF #3 and ESF #12 annexes articulate USACE's responsibility for leading the short-term power restoration mission, including the identification and assessment of generator requirements for critical facilities.

Emergency Power Facility Assessment Tool

USACE created the Emergency Power Facility Assessment Tool (EPFAT) program to improve the short-term power mission by seeking to collect generator requirements for critical facilities prior to a disaster created requirement for backup power. USACE describes EPFAT as a "secure web-based tool that can be used by critical public facility owners/operators, or emergency response agencies, to input, store, update and/or view temporary emergency power assessment data. Having pre-installation assessment data in advance will expedite USACE's abilities to provide temporary power."[28]

Without pre-installation assessment data, "it can take the USACE many hours and possibly days to deploy assessment teams to all of the impacted critical public facilities

[26] United States, Federal Emergency Management Agency, *Emergency Support Function #3 – Public Works and Engineering Annex,* May 2013, p.4.
[27] United States, Federal Emergency Management Agency, *Emergency Support Function #12 – Energy Annex,* May 2013, accessed March 10, 2014, http://www.fema.gov/media-library-data/20130726-1921-25045-2193/final_esf_12_energy_20130501_r1.pdf , p.6.
[28] United States, Army Corps of Engineers, *Emergency Power Facility Assessment Tool (EPFAT),* May 30, 2012, accessed February 1, 2014, http://www.usace.army.mil/Portals/2/docs/Emergency%20Ops/National%20Response%20Framework/power/Emergency%20Power%20Facility%20Assessment%20Tool%20Fact%20Sheet%2030%20May%202012.pdf

so that the right generators can be properly installed… [and] by adding information to EPFAT prior to a disaster, USACE will have the assessment data and generator size requirements needed to expedite the installation process."[29] Further, "the database also provides the facility manager and the local/state/federal emergency management staff a permanent off-site repository for this information which is password protected and under controlled access."[30] Figure 1 lists the 12 categories that are used to classify types of critical facilities that are included in the EPFAT program.

CATEGORIES:	
01. ANIMALS AND PETS:	Animal Hospital, Animal Shelter, Pet Shelters, Zoos, Animal Parks,
02. COMMUNICATIONS:	Radio Towers, Cell Towers, Communication Centers, 911 Call Centers, TV Stations, Radio Stations, Ham Radio Operations, 311 Services, 211 Services, 411 Services
03. EMS FACILITIES:	Police, Fire, Correctional Facilities, Sheriff, EM Responder, Ambulance, Jails, State Police Headquarters, State Police Sub-Stations, National Guard Armory (State), Command Post
04. MEDICAL FACILITIES:	Hospitals, Nursing Homes, Clinics, Morgue, 1st Care, Assisted Living Centers, Human Research Centers, Biological & Radiological Centers, Heart Centers
05. MUNICIPAL BUILDINGS:	Libraries, Cemeteries, Schools, County Facilities, Courthouse, Post Office, Municipal Buildings, Town Hall, Bus Shop, Auditoriums, Sports Centers, Civic Centers, Airports
06. PARKS AND RECREATION:	Park Areas, RV Campgrounds, Boat Launches, Marina's, Mobile Home Parks, Tent Campgrounds, Semi-Permanent Trailer Parks, Gardens, Ball Fields
07. PUBLIC WORKS:	Maintenance, Lift Stations, Water Supply, Water Treatment, Water Distribution, Waste Water, Sewage Treatment, Pump Stations, Water Towers, Drainage Districts, Wells, Roads, Electric
08. SHELTERS:	Shelters, Soup Kitchens, Churches, Mobile Kitchen, Mobile Temporary Showers, Emergency Worker Feeding Station, Mobile Temporary Laundry
09. LOCAL BUSINESSES:	Fuel Vendor, Property Owners Association, Home Depot, Lowe's, Hardware Stores, Stop and Go Shops, Ice Vendors, Water Vendors
10. STATE GOVERNMENT	State COOP Sites, State Governance Buildings, State Government Agencies, State Staging Areas, State Level of Overall Response & Recovery
11. DOD & FEDERAL AGENCIES	DOD Response, US Coast Guard, Federal Buildings, Federal Government, FEMA Mobile Disaster, FEMA Staging Areas, FEMA POD Sites, Tractor Trailer Parking, Bed Down Areas
12. ALL OTHER	Catch All for Everything Else That Didn't Fit Anywhere Else

Figure 1: *Critical Facility Categories*. Source: United States Army Corps of Engineers[31]

[29] United States, Army Corps of Engineers, *Emergency Power Facility Assessment Tool (EPFAT),* May 30, 2012.
[30] Ibid.
[31] United States, Army Corps of Engineers, *Emergency Power Facility Assessment Tool (EPFAT) Presentation*, by Dave Bishop (Washington, DC, 2013), 16.

IV. BACKGROUND

Despite USACE's efforts in beginning to collect better data on generator requirements, FEMA continues to acquire, store, maintain, deploy, and install generators without an accurate understanding or realistic estimation of the type and number of generators that may be required to power critical facilities in response to disasters. While there is no evidence that the generator mission is ineffective, it has been made apparent that the generator mission does suffer from a lack of efficiency. This inefficiency is due to the number and type of generators stored and maintained at FEMA's distribution centers not matching or fulfilling any specific requirement, and therefore the number of generators deployed in response to disasters has been drastically greater than the number of generators actually installed to power critical facilities.

Deficiency in Data

As there is a lack of data on estimated critical facility requirements for generators, FEMA deploys generator packages that are over-encompassing to attempt to prepare for any requirements that may arise following a disaster. These packages consist of approximately 54 "15KW to 800KW" generators for disasters that occur in the continental United States (CONUS) and 85 "11.5KW to 800KW" for disasters that occur outside of the continental United States (OCONUS).[32] However, of the 1,699 generators deployed since 2011 as part of these power packs, only 216 generators have actually been installed to power critical facilities. In other words, only 12.71 percent of generators deployed have been used in disasters. Further, in 2013, 0 percent of the 267 generators

[32] United States. US Army Corps of Engineers. *Senior Leaders' Seminar*. p. 5, Washington, DC, 2014.

deployed were actually needed to fulfill requirements attributable to a disaster.[33] Despite these numbers, the low utilization rate of generators in previous disasters cannot be assumed to mean that FEMA should necessarily reduce its generator cache without further analysis as FEMA is responsible for leading the federal government's efforts to mitigate, prepare for, protect against, respond to, and recover from catastrophic disasters that exceed the capability of SLTT jurisdictions.

This section explains the criticality of power in disasters, describes the anticipated increase in frequency of severe weather, calls attention to the aging infrastructure in the United States, underscores the Nation's power outage issues relative to the international industrialized community, and stresses that the sum of these factors ultimately contributes to a shift from a centralized approach to providing resources and capabilities to a diffused model in which the federal government encourages the Whole Community to better prepare for disasters.

Criticality of Power in Disasters

As mentioned above, energy issues are "uniquely critical due to the enabling functions they provide across all critical infrastructure sectors."[34] Energy issues have cascading impacts on all other sectors, consequently creating issues that require additional disaster response action to resolve. The ability to address energy issues in the earliest phases of a disaster response, such as by providing generators to critical facilities, can significantly reduce the list of competing issues that the government would otherwise

[33] United States. US Army Corps of Engineers. *Senior Leaders' Seminar*. p. 5, Washington, DC, 2014.
[34] United States, The White House, *Presidential Policy Directive -- Critical Infrastructure Security and Resilience,* February 12, 2013.

need to deconflict and resolve. This enables FEMA to better prioritize required actions in a disaster response to best serve the impacted populations.

An example of the cascading impact of disruptions in power is described the U.S. Department of Energy's *U.S. Energy Sector Vulnerabilities to Climate Change and Extreme Weather*:

> "Electric power outages affecting gas station pumps in the aftermath of Hurricane Sandy limited gasoline available to customers. Similar impacts occurred in association with electricity supply and the operations of oil and gas refineries and pipeline distribution. Thus, disruptions of services in one energy sector (electricity supply, transmission, and distribution) may result in disruptions in one or more other sectors (petroleum production and distribution), potentially leading to cascading system failures. In addition to interdependencies across energy sector components, the issue of interdependency is also relevant between the energy sector and other sectors... [f]or example, water pumping, transport, treatment, and conditioning require energy."[35]

Given the interdependencies with other sectors and the cascading impacts caused by energy issues, ensuring power for critical facilities in the aftermath of disasters should be a leading priority in future disaster response operations, particularly as the frequency of severe weather is expected to increase into the future, as described in the next paragraph. Further examples of infrastructure interdependencies with the energy sector can be seen in Figure 2 below.

[35] United States, Department of Energy, *U.S. Energy Sector Vulnerabilities to Climate Change and Extreme Weather*, (Washington, DC, 2013), p.5.

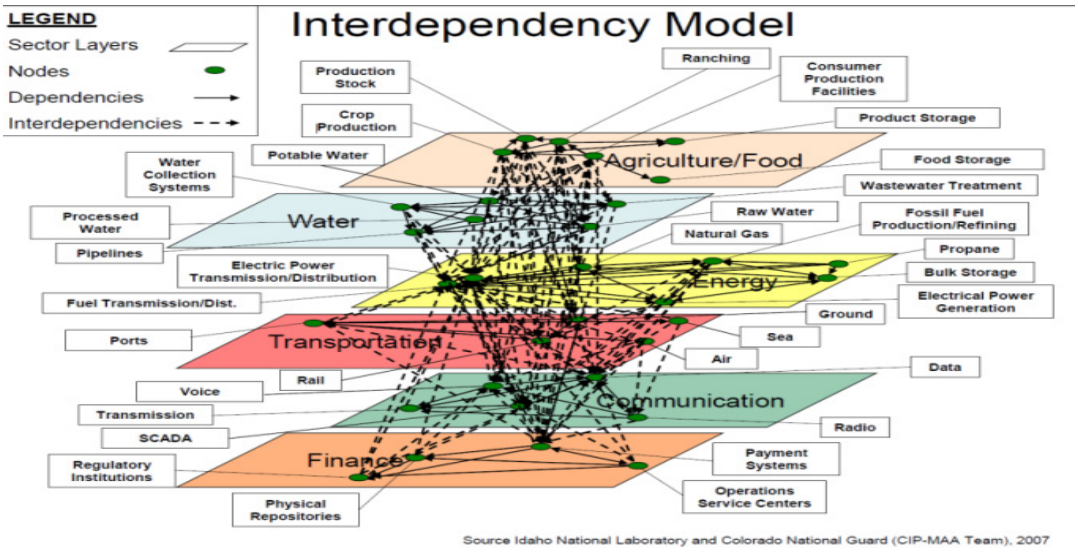

Figure 2: *Energy Sector Interdependencies*. Source: United States Department of Energy[36]

Increased Frequency in Severe Weather

The occurrence of severe weather is becoming increasingly frequent and many experts agree that severe weather will continue to be a regular occurrence in the future.[37] As a result of this increase and the state of the Nation's aging energy infrastructure, "buildings have become increasingly susceptible to brownouts, power surges, and rolling blackouts."[38] According to FEMA's *Strategic Foresight Initiative* (SFI), which analyzes the anticipated impacts and consequences of changes in climate and severe weather on future disaster response requirements, "the frequency of extreme weather is accelerating, with events like Hurricane Sandy threatening to become the norm… [while] fiscal pressure and political gridlock has resulted in piece-meal action to mitigate future risks

[36] United States, Department of Energy, Office of Electricity Delivery and Energy Reliability Infrastructure Security and Energy Restoration, *National Response Framework and National Infrastructure Protection Plan Presentation*, by Anthony Lucas (Washington, DC, 2012), 29.
[37] Young, Jr., William R. 2009. "Emergency Power for Critical Items." *AIP Conference Proceedings* 1157, no. 1: 201-206. *Academic Search Complete*, EBSCO*host* (accessed February 10, 2014).
[38] Morton, Jennie. "Gear Up for Grid Failure." *Buildings* 107, no. 12 (December 2013): 40, p. 41. *MasterFILE Premier*, EBSCO*host* (accessed February 10, 2014).

and adapt to the growing dangers. Meanwhile, critical infrastructure is undermined by extreme weather and overburdened by increased use."[39] This has caused the "annual frequency of billion-dollar weather and climate-related events and the annual aggregate loss from these events [to] increase during the last 30 years… affect[ing] many sectors."[40] These costs are expected to rise as "the growing consensus is that current harsh weather conditions will likely worsen, and that warming and sea-level rise estimates are conservative."[41]

The SFI places particular emphasis on the need to prepare for increased energy disruptions as "the U.S. power grid may be the most fragile" of all critical sector components.[42] Further, a report released by the White House Council of Economic Advisers and the Department of Energy's Office of Electricity Delivery and Energy Reliability presents that "thunderstorms, hurricanes, and blizzards were responsible for 679 widespread outages in the last decade, 87% of which affected 50,000 or more customers" costing billions annually.[43] In fact, there have been "144 weather disasters costing $1 billion or more since 1980… 11 [of which] occurred in 2012… the second highest cluster behind 2011 for any year on record." [44] Furthermore, seven of the ten most expensive storms in terms of the cost of damages have occurred between 2004 and 2012.[45]

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[39] United States, Federal Emergency Management Agency, *Toward More Resilient Futures: Putting Foresight Into Practice* (Washington, DC, 2013), p.9.
[40] United States, Department of Energy, *U.S. Energy Sector Vulnerabilities to Climate Change and Extreme Weather*, 29.
[41] United States, Federal Emergency Management Agency, *Toward More Resilient Futures: Putting Foresight into Practice*, p.10.
[42] Ibid, p.9.
[43] Morton, Jennie. "Gear Up for Grid Failure." p.41.
[44] Ibid.
[45] Ibid.

U.S. Power Outage Compared to the International Community

While changes in climate and severe weather patterns have global consequences, the impacts in the United States appear to be more significant than in other industrialized countries due to the state of the Nation's aging energy infrastructure. As a result of this, the United States is "far below other industrialized countries" in terms of power reliability as "the average blackout time is 90% lower in Denmark and 86% less in the Netherlands. Though Spain has the second poorest performance behind the US for duration [of power outages], its outages are still 56% shorter" than in the United States.[46]

FEMA Recognizes the Need to Prioritize Energy in Response

As the Agency responsible for leading the Nation's consequence management efforts, FEMA recognizes that the increased frequency of power outages will continue to impact other sectors, especially following events that have occurred in the last decade. For instance, in 2003 "over 40 million people in the US and about 10 million people in Canada experienced a sudden, unexpected utility power outage… This resulted in the loss of water pressure to over four million customers in Detroit alone for four days… [and] all the trains running into and out of New York City were shut down." [47] Two years later, Hurricane Katrina left more than three million people without power, and "only about a third of the damaged structures had power restored some six months later."[48] Most recently, in 2012, Hurricane Sandy caused billions of dollars in damages and left more than 8.5 million customers without power in one of the Nation's most populated

[46] Morton, Jennie. "Gear Up for Grid Failure." p.42.
[47] Young, Jr., William R. "Emergency Power for Critical Items." p.201-202.
[48] Ibid, p.202.

regions.[49] As the SFI anticipates that severe weather incidents such as Hurricane Sandy will occur more frequently, FEMA must continue to work with stakeholders throughout the Whole Community to better prepare for future disasters and emphasize the Nation's need to prioritize addressing energy issues.

Key Stakeholders

Addressing efficiency issues in FEMA's generator program requires an approach that includes stakeholders from the Whole Community. The most significant stakeholders to be considered when seeking to resolve strategic and policy issues with the generator mission include: the Administrator of FEMA, the FEMA Region III Administrator, the USACE Director of Contingency Operations and Homeland Security, state and local emergency management officials, and critical facility owners and operators. Members of Congress and White House leadership may also have interest in short-term power outage issues but they are not principal actors for the purposes of this memorandum.

FEMA Administrator

The Administrator of FEMA possesses statutory and delegated authorities to lead the federal government's emergency management efforts. The FEMA Administrator has a motto for how he believes the federal government should respond to disasters, '*Go Big, Go Early, Go Fast, Be Smart*.'[50] Through this, the Administrator aims to ensure that communities impacted by disasters will receive the resources and capabilities needed to effectively fulfill their disaster response requirements, wants those resources and

[49] Morton, Jennie. "Gear Up for Grid Failure." p.41.
[50]United States, Federal Emergency Management Agency, *2012 State of FEMA: Leaning Forward,* January 1, 2012, accessed December 1, 2014, http://www.fema.gov/pdf/about/state_of_fema/state_of_fema.pdf.

capabilities delivered as quickly as possible, and simultaneously wants the resources delivered efficiently. These principles are applied throughout the *2014-2018 FEMA Strategic Plan.*

FEMA Region III Administrator

The Administrator of FEMA Region III initiated the review of the generator mission in meeting with FEMA's then Associate Administrator for the Office of Response and Recovery, who has since been confirmed as the Deputy Administrator of FEMA. As the FEMA Region III Administrator is recognized as a leading voice among the FEMA Regional Administrators, it is anticipated that the way forward on this initiative is more likely to be accepted by the FEMA regions if the FEMA Region III Administrator is provided an opportunity to inform the way forward.

USACE Director of Contingency Operations and Homeland Security

The USACE Director of Contingency Operations and Homeland Security leads ESF #3. The Director has a close working relationship with FEMA leadership, and is recognized as one of the most operationally experienced and respected leaders in the Emergency Support Function Leadership Group (ESFLG).[51] The Director has confirmed that USACE would welcome FEMA's support and endorsement of their ongoing efforts to improve the generator mission at the USACE Senior Leaders Seminar (SLS).[52]

[51] The ESFLG is the authoritative coordinating body for ESF lead, coordinating, and supporting agencies.
[52] United States. US Army Corps of Engineers. *Senior Leaders' Seminar*. Washington, DC, 2014.

State and Local Emergency Management Officials

There is general agreement among the states that disaster preparedness and community resilience are important priorities. Many states have actively engaged with FEMA requesting support in identifying critical facilities and have asked for guidance on conducting assessments of generator requirements for those critical facilities. While state governments have the ultimate authority to request a Presidential declaration for support in responding to disasters, the county level emergency management officials generally have more visibility and a closer working relationship with the owners and operators of critical facilities due to the nature of local governments interacting within their localities. As a result, any proposal that pertains to critical facilities is expected to find more success if the local emergency agencies are involved.

Critical Facility Owners and Operators

Critical facilities provide critical services to their community. As many critical facilities are owned by local governments or provide public services on behalf of the government, critical facility owners and operators are responsible for serving the needs of their communities. Therefore, it is in their best interest to ensure that their facilities remain operational when their communities are impacted by disasters.

Congress and the White House Office of Management and Budget

The four Congressional committees that have most influence on FEMA are the House and Senate Appropriations Committees, the House Homeland Security Committee's Subcommittee on Emergency Preparedness, Response, and

Communications, and the Senate Homeland and Governmental Affairs Committee's Subcommittee on Emergency Management, Intergovernmental Relations, and the District of Columbia. These committees are FEMA's respective main appropriating and authorizing committees. However, FEMA does not require new authorizations or additional appropriations to accomplish the recommendations presented in this memorandum, as addressed below. However, any future requests for funding changes to the program will require the approval of the Appropriations Committees and the White House Office of Management and Budget (OMB).

V. POLICY PROPOSAL

While the original intent of this memorandum was to provide a recommended course of action for expediting the installation of generators at critical facilities in the wake of a disaster, the evaluation of the generator mission in its entirety has shown that the primary issue is in fact a lack of data collected and analysis performed to drive better informed decisions in the acquisition, storage, maintenance, and deployment of generators. To address this, it is proposed that FEMA perform a comprehensive evaluation of the generator mission. This would be the first comprehensive study on the subject and would provide the data necessary for future action, such as potential legislation to expand the program, grants to enable critical facility owners and operators to purchase their own permanent generators, or possibly the decision to privatize or contract out the generator mission. To significantly increase the collection of data needed to identify the generator requirements for critical facilities, it is also proposed that FEMA partner with USACE to promote the EPFAT program.

Policy Authorization

As discussed above, FEMA is authorized to manage its generator program and evaluate the effectiveness and efficiency of the program through coordination with the interagency during steady-state operations. While the Stafford Act and PKEMRA provide the authorities found in statute, PPD-8, the NRF, and the ESF construct enable FEMA to collaborate with state and local emergency management officials, as well as with USACE through ESF #3, to meet the goals of this proposal.

Policy Implementation

This proposal incorporates two actions – a comprehensive study by FEMA to evaluate and determine the requirements for the generator mission, and an information campaign to promote EPFAT, the existing fully funded tool for identifying generator requirements for critical facilities. As the latter can be leveraged to provide information needed to evaluate the requirements of FEMA's generator mission, the communication campaign should begin immediately and be carried out concurrently while the generator mission study is being conducted. These initiatives should be led and coordinated by the recently created FEMA/USACE generator working group established on May 27, 2014.[53]

Program Evaluation

The comprehensive study on the generator mission should include the identification of authorities and strategic guidance; the assessment of current capabilities (type and size of generators) and lifecycle costs; the capacity needed (number of each

[53] United States. US Army Corps of Engineers. *Senior Leaders' Seminar*. p.5, Washington, DC, 2014.

type and size of generator); a detailed analysis of historical usage, including the number of generators requested, deployed, and installed over a longer period of time than has been assessed to date; and the identification of future risks to the energy sector specific to power and the cascading impacts of those risks on other critical infrastructure sectors. Additionally, leadership will need to determine the acceptable level or threshold of risk that the government is willing to accept. This study should be conducted by the Office of Response and Recovery's Logistics Management Division, informed by the Generator Working Group, and validated by FEMA's Enterprise Resource Planning Division within the Office of Policy and Program Analysis, which was established to "lead the Agency-wide effort to translate strategic guidance into achievable, credible, affordable packages of capabilities to build into the out year budgets and successfully defend through the multiple Federal resource allocation processes."[54]

The final report on the findings can then inform leadership decisions on the future direction of the generator program to better match the capability and capacity of the program to realistic requirements. To increase the likelihood that the appropriate level of attention will be drawn to the report and therefore will be considered by the key stakeholders identified above, the report release date should coincide with the first day of next hurricane season, June 1, 2015. Following the report's release, the findings can be briefed, as appropriate, at the multiple 'Hurricane Season Outlook' briefings that occur annually in June in which various stakeholders participate, including Congress, the White

[54] United States. Federal Emergency Management Agency. *FEMA Rotation Program Opportunity-Director, Enterprise Resource Planning Division.* October 15, 2014. Accessed October 15, 2014. http://on.fema.net/employee_tools/occhco_tools/cdo/rja/ROTATIONALaSSIGNMENTOPPORTUNITIES/2014-035,%20OPPA,%20Director,%20%20Enterprise%20Resource%20Planning%20Division,%20GS%2015.pdf

House, interagency partners, and state and local emergency management officials. This can assist with educating stakeholders prior to any potential resource requests that the findings of the report may require, and therefore can generate stakeholder support prior to submitting such requests.

Communication Campaign

In order to ascertain the tangible requirements of the generator program, FEMA and USACE must analyze data on the types and sizes of generators required to supply backup power to individual critical facilities across the Nation. While USACE recently created the EPFAT tool to allow the owners and operators of critical facilities to share their generator requirements with FEMA and USACE, since its inception, EPFAT has not collected enough data to inform decisions on which generators are likely to be required in a disaster. This is due in part to the fact that the EPFAT tool has been recently developed, but is also due to USACE not having formulated an outreach strategy to promote the program to SLTT leaders and the emergency management community. While USACE manages the EPFAT tool, FEMA can partner with USACE to leverage the strong relationships that FEMA has cultivated with the SLTT emergency management community to encourage the owners and operators of critical facilities to share their requirements through EPFAT.

Through this partnership, FEMA and USACE can pursue a communication campaign, defined as a "preplanned set of communication activities designed by government officials to reach and motivate a relatively large number of targets to effect

some cognitive, attitudinal, or behavioral objectives."[55] FEMA can work with USACE to conduct this communication campaign targeted at state and local emergency management officials to promote the EPFAT program through FEMA's regional construct.[56] This outreach will include utilizing the press releases, bulletins, and trade magazines that FEMA's Office of External Affairs regularly contributes to, and through prioritizing the promotion of EPFAT in the regularly occurring meetings that each FEMA region has with their respective SLTT government leadership, emergency management community, and private and non-profit sector partners.

VI. POLICY ANALYSIS

The courses of action proposed above address FEMA leadership's desire to increase the efficiency of the Agency's generator program. The proposed actions meet leadership's expectations for improvement in this mission space and the proposal can be implemented immediately. The ability to produce a comprehensive report on the generator program will enable FEMA leadership to make better informed decisions regarding the Agency's process of acquiring, storing, maintaining, deploying, and installing generators, allowing for a more efficient program in terms of both time and money. Additionally, by conducting a public outreach campaign with USACE for the EPFAT, FEMA, with the help of state and local emergency managers, can encourage the owners and operators of critical facilities to share their generator requirements. The collection of generator requirements for critical facilities can help provide better data for

[55] Marie-Louise Bemelmans-Videc, Ray C. Rist, and Evert Vedung, *Carrots, Sticks, and Sermons: Policy Instruments and Their Evaluation* (New Brunswick, NJ, U.S.A.: Transaction Publishers, 2003), p.105.
[56] FEMA divides the United States and its territories into ten regions, with each being led by a Regional Administrator who is a member of the Senior Executive Service.

the comprehensive report and can be used to expedite the installation of generators at critical facilities following disasters that disrupt power.

Strengths:

No Changes in Authorization or Additional Appropriations Required

Recognizing that "one of the first questions asked by government policymakers regarding any proposal (particularly in the context of with today's high budget deficits), is will it cost anything and if so, how much?,"[57] a strength of this proposal is that it addresses the concerns of FEMA leadership by utilizing existing authorities and mechanisms to gain efficiencies in the generator mission without requiring changes in authorization or additional appropriations. FEMA can utilize existing initiatives and internal program staff to gain efficiencies in the delivery of the generator mission without requiring additional authorities or funding through the proposed courses of action.

Identification of Program Requirements for Leadership

The purpose of the proposed comprehensive report and associated information campaign is to close an information gap between the government and the owners and operators of critical facilities. The proposed analysis and its accompanying report would identify the requirements for the generator mission based on law and strategic direction as well as on FEMA's catastrophic planning scenario, taking into account historical data

[57] Paul Weinstein, Jr., "Expanding Opportunities for Informed Participation in Public Policy," *Occasional Papers in Science and Technology Policy*, August 30, 2010, p.15, accessed December 1, 2014, https://www.ida.org/~/media/Corporate/OccasionalPapers/OP-1-2010-ExpandingOpportunitiesForInformedParticipationInPublicPolicy-v2.ashx.

and future risk assessments, and would be the first definitive study on the generator mission.

By defining the mission requirements more accurately, FEMA can better determine the type and number of generators needed by critical facilities in potential disaster scenarios, which will approximate the type and number of generators to be acquired and maintained. This will also provide a better informed process for the deployment of generators so that time and money will not be wasted in deploying a large number of generators to disasters that have historically had a low utilization, or installation, rate. This would provide direction for a way forward, including adjustments to the program, or the possibility for the need for additional legislation, regulations, or incentive-based approaches to ensure that critical facilities are powered in the wake of disasters. Without this comprehensive study, a policy solution addressing the root causes for the inefficiencies in the generator program is not likely to be found.

OMB Approved Methodology

The analysis for the proposed report is expected to provide context for both FEMA leadership, who manage the program, and OMB, which ultimately approves FEMA's budget, on the Executive side, and consequently would decide whether to approve any adjustments in program funding. As OMB recently approved a $2.5 million request to purchase another FEMA owned commodity, meals for disaster survivors, contingent upon the completion of a report that uses the same methodology

recommended for the analysis on the generator mission,[58] it is expected that the findings of the report will provide a sound justification to OMB for any funding requests that may be recommended based on the findings of the report.

Existing Systems

Given the expected future increase in severe weather and consequently the increased vulnerability of the power grid, as explained earlier in this memorandum, the SFI argues that "integrating and further institutionalizing catastrophic planning efforts…across the Whole Community can be a great starting point"[59] for preparing for the potential effects of climate change. Acknowledging this, FEMA can improve the generator mission by coordinating the federal government's preparedness and response efforts using its professional network to increase participation in the EPFAT reporting system among critical facility owners and operators. FEMA can leverage the relationships it has established with state and local emergency management executives, who look to FEMA for emergency management guidance, to promote the EPFAT.

This campaign is expected to urge state and local emergency management officials to encourage critical facility owners and operators to participate in the EPFAT program by entering their facilities' generator requirements into EPFAT. This data can be used to inform FEMA's analysis of its generator mission requirements and will enable FEMA, USACE, and SLTT governments to expedite the installation of generators at critical facilities earlier in a disaster response, as shown in Figure 3 below.

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[58] United States, Federal Emergency Management Agency, *Commodities Justification to OMB: Risk Analysis on Preparedness to Provide Meals to Disaster Survivors Presentation*, by Robert J. Fenton. (Washington, DC, 2014), p.8.
[59] United States, Federal Emergency Management Agency, *Toward More Resilient Futures: Putting Foresight into Practice*, p.10.

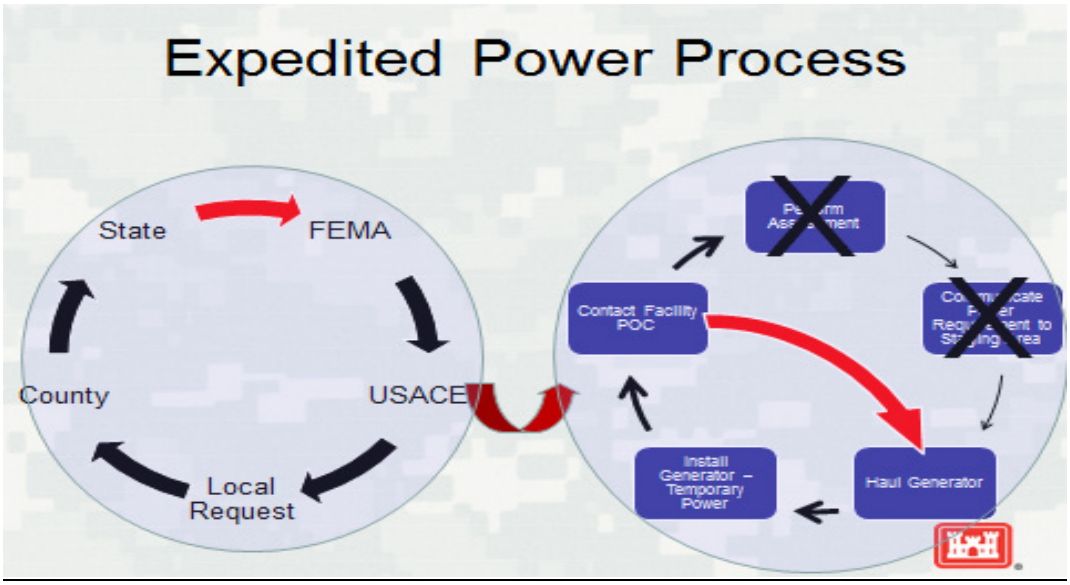

Figure 3: *Critical Facility Categories*. Source: United States Army Corps of Engineers[60]

Benefits of an Information Campaign

The decision to conduct the proposed EPFAT information campaign is beneficial for several reasons. First the campaign does not require additional funding because it utilizes the existing systems explained above to conduct the outreach. However, if funding was needed, "information programs are generally not very costly."[61]

Second, while "there is no single correct approach"[62] to conducting an information campaign, research suggests that campaigns can be effective particularly if it is in the self-interest of the recipient. Participating in the EPFAT serves in the interest of critical facility owners and operators as sharing their generator requirements through EPFAT can expedite the installation of generators should they

[60] United States, Army Corps of Engineers, *Emergency Power Facility Assessment Tool (EPFAT) Presentation*, by Dave Bishop (Washington, DC, 2013), p.8.
[61] Bemelmans-Videc et al, *Carrots, Sticks, and Sermons: Policy Instruments and Their Evaluation*, p.125.
[62] Ibid, p.48.

need backup power during a Presidentially declared disaster. As "it seems quite rational for government to presume that lack of information is the reason why people do not show the desired energy conservation behavior,"[63] it is reasonable for FEMA to assume that critical facility owners and operators are not aware of the EPFAT or its benefits. Therefore, by providing critical facility owners and operators with information on the EPFAT and its benefits, the campaign can succeed.[64]

This is supported by the Paternalistic Theory which "asserts that information is particularly appropriate in situations where the government intervenes in order to effect the recipients to act in their own not very well-understood interest… [and] the strongest case for information-dispensing action can be brought to bear in situations where the target individual is unaware that the action lies both in his own and in the community's interest."[65] The Theory of Coinciding Interests further "proposes that information should be applied when the desired actions are in the private interests of the targets as well as in the public interest of the state."[66] As discussed, such is the case with the intent of the EPFAT.

Third, according to the Legitimating Theory, the proposed courses of action can legitimate future implementation of the findings of the report, informed in part by the data that can be collected by promoting the EPFAT. According to this theory, "information programs are launched in the light of other more constraining policy instruments."[67] The optimistic variant of the Legitimizing Theory "suggests that decision makers sincerely hope that the perceived problem will be solved through ample use of

[63] Bemelmans-Videc et al, *Carrots, Sticks, and Sermons: Policy Instruments and Their Evaluation*, p.126
[64] Ibid, p.125.
[65] Ibid, p.109.
[66] Ibid, p.107.
[67] Ibid, p.112

informative policy instruments and that stronger measures can be avoided… with the hope that information will be sufficient."[68] As additional action may be required in the future to address the report's findings, this proposal also serves in the pessimistic variant to the Legitimating Theory, which "suggests that information is used for the political purpose of paving the road for stronger interventions…. Since information efforts are cheap, easy to enact, and most of all based on voluntary participation, they are supposed to be easier to accept for the general public. When stronger measures are inaugurated, the decision makers may legitimize their actions by arguing that softer measures have already been tried to no or little avail… This type of legitimating theory is probably most applicable to paternalistic interventions."[69] As the findings of the comprehensive report on the generator mission are not predictable outside of mere speculation, the analysis for the report and its accompanying information campaign can send the message to FEMA's stakeholders that the Agency is seeking to gain efficiencies in the program and can provide context for any changes in the program that result from the findings of the report.

Fourth, rather than reaching out directly to the owners and operators of the numerous critical facilities throughout the Nation, FEMA can utilize the state and local emergency management community as "intermediaries to transmit the message."[70] By doing this, the owners and operators are more likely to trust the EPFAT and see it as a beneficial tool rather than as an overreach by the federal government attempting to collect information or the "government 'preaching' to citizens."[71] This approach is necessary for the campaign to succeed as "to communicate successfully, [the

[68] Bemelmans-Videc et al, *Carrots, Sticks, and Sermons: Policy Instruments and Their Evaluation*, p.113
[69] Ibid, p.113
[70] Ibid, p.106
[71] Ibid, p.49.

government] must influence and engage with protagonists. These are the people who will ensure that ideas are carried and circulated through the wider communities."[72] As critical facility owners and operators regularly interface with state and local emergency management officials, they will likely be more inclined to share their generator requirements through EPFAT if it is recommended by the state and local emergency management officials.

Lastly, by packaging the proposed comprehensive program review with an information campaign, FEMA is more likely to receive better data for the report. This is because "public influencing should be seen as complementary to other policies, not as a strategy in its own right... Information and influencing campaigns will work best when people have a reason to want to know – and government is ideally placed to create that reason, through other policy measures"[73] such as the EPFAT and its ability to provide FEMA and USACE with the ability to expedite the installation of generators.

Weaknesses:

The proposal accepts that FEMA should maintain a generator program and seek efficiencies in that program to ensure that critical facilities are provided with backup generators when Presidentially declared disasters impact power distribution to those facilities. However, it can be argued that the generator program may be addressing secondary issues that could be lessened by policy adjustments in other areas of the federal government, such as policies that can address the causes of climate change or the

[72] Bemelmans-Videc et al, *Carrots, Sticks, and Sermons: Policy Instruments and Their Evaluation*, p.18.
[73] Ibid, p.45.

vulnerabilities in the power grid which contribute to the increased risk for power outage. While the report is expected to determine the generator program requirements, the proposal lacks the inclusion of proposed alternatives to addressing the problem. Additionally, this memorandum states that generators have had a 12 percent utilization rate, with some years having had zero generators installed; this may be sufficient data for leadership to decide to reduce the generator cache without further analysis. There has also never been an incident in which a generator was requested during a Presidentially declared disaster that was not provided, which means there are no issues with the program in terms of effectiveness. As this is the case, FEMA leadership may choose to not modify the program.

Proposal Lack Comparative Alternatives

A cost-effectiveness analysis, "the search for the most cost-effective approach to providing a desired public good," [74] could contrast alternative means of providing generators to recommend the "approach that provides that good most efficiently."[75] Without the inclusion of a comparative analysis, FEMA would not be enabled to discover potentially better alternative solutions to meeting the intent of the generator mission, such as establishing standing contracts to lease generators from the private sector during disasters which could eliminate costs associated with acquiring, storing, maintaining, and hauling generators, and eliminate the need for lifecycle replacement funding. Additionally, if the proposal included the consideration of opportunity cost, "the value of

[74] Jonathan Gruber, "Cost-Benefit Analysis," in *Public Finance and Public Policy* (New York: Worth, 2011), p.220
[75] Gruber, "Cost-Benefit Analysis," p.220.

that input in its next best use,"[76] the analysis may find that other means of addressing the issue are more effective and/or efficient in both time and money, such as investing in hardening infrastructure to increase the resiliency of the power grid or providing grants or tax incentives so that state and local governments can purchase generators for critical facilities, thus eliminating the need for FEMA to own generators.

Guarantee Can Disincentivize Preparedness

The report may be impractical as "failing to project the impact of any new policy concept in real terms is often a death knell for an idea. Too often proposals are accompanied by anecdotal evidence, case studies, or input-focused goals rather than real projections of possible outcomes."[77] If generators are in fact the solution for ensuring power to critical facilities, by FEMA taking action to better enable its ability to provide generators to critical facilities following disasters, critical facility owners and operators may be less likely to take proactive measures to improve the resiliency of their critical facilities. By informing critical facility owners and operators that the government will provide backup generators, regardless of whether they provide their generator requirements through EPFAT, the owners and operators may be less inclined to purchase backup generators themselves or share their generator requirements until a generator is needed during a disaster.

This can have an adverse effect as in the case of a catastrophic event, the government may not have enough generators to power all critical facilities and may not be able to install the generators it can provide in the time needed. If the program does

[76] Gruber, "Cost-Benefit Analysis," p.208.
[77] Weinstein, "Expanding Opportunities for Informed Participation in Public Policy," p.16.

disincentivize action, FEMA is not increasing the resilience of critical facilities over time, and SLTT governments will remain dependent on the federal government to provide sources of backup power. Therefore, any promotion of the generator mission and the EPFAT may worsen rather than resolve the issue.

Campaigns Do Not Guarantee Participation

According to Jonathan Gruber, an expert in the field of complex policy analysis, "for a government making decisions about how much of a public good to provide… theoretical concepts must be translated into hard numbers."[78] The Negative Theory of Universal Compliance argues that "information instruments should not be utilized when universal compliance is considered necessary… [But,] if on the other hand, it would be sufficient that 5 or 10 or 20 percent of addressees comply, an information campaign might be considered."[79] While it may not be necessary to receive data on the generator requirements for 100 percent of all critical facilities in the Nation for the government to approximate potential requirement into hard numbers, given the low utilization rate of deployed generators being roughly 12 percent, a higher participation rate than 5 to 20 percent of critical facilities by be required, which an information campaign is not guaranteed to achieve and cannot be guaranteed to achieve by the June 1, 2015, deadline for the proposed report. Additionally, "it is important not to overestimate the power of providing information. Information does not necessarily lead to increased awareness, and increased awareness does not necessarily

[78] Gruber, "Cost-Benefit Analysis," p.206.
[79] Bemelmans-Videc et al, *Carrots, Sticks, and Sermons: Policy Instruments and Their Evaluation*, p.107.

lead to action."[80] This is because "providing information does not necessarily change attitudes, and changing attitudes does not necessarily cause a change in behavior."[81]

Status Quo May be Sufficient:

There has never been an incident in which a generator was requested to provide backup power to a critical facility but was not provided. With this, and there being no outstanding audit recommendations specifically for the generator program, the program does not necessarily need to be altered. Rather than expend resources to gain efficiencies in the generator program, FEMA can put the time and effort that the proposal would require into improving other areas of FEMA that have been identified as lacking effectiveness, which in FEMA's mission can improve the government's ability to save lives, reduce suffering, and protect property.

VII. POLITICAL ANALYSIS

While the proposed comprehensive report and its accompanying information campaign could more accurately identify the generator mission's program requirements and thereby provide the information necessary for leadership to make informed decisions on the future direction of the program, "often researchers are disappointed when they provide groundbreaking information and/or data to the government but the executive branch decides not to act upon… [due to] the failure of researchers to turn their research and/or data into real, usable policy."[82] In order to ensure that the proposal is usable, and to maximize the likelihood that the proposal will be put into action, it is important for

[80] Bemelmans-Videc et al, *Carrots, Sticks, and Sermons: Policy Instruments and Their Evaluation*, p.46
[81] Ibid, p.14.
[82] Weinstein, "Expanding Opportunities for Informed Participation in Public Policy," p.14.

leadership to understand the positions of key stakeholders. As identified in the background section of this memorandum, the most significant stakeholders concerned with the proposed course of action include the FEMA Administrator, the FEMA Region III Administrator, the USACE Director of Contingency Operations and Homeland Security, state and local emergency management officials, and the owners and operators of critical facilities. Additionally, should additional funding be required to implement the findings of the report, OMB and the Congressional Appropriations Committees will become larger stakeholders.

It is expected that the FEMA Administrator will support this proposal if the Deputy Associate Administrator for the Office of Response and Recovery and the Regional Administrator for FEMA Region III agree to take the course of action recommended, as they were tasked by the Deputy Administrator to recommend a course of action. As the FEMA Region III Administrator is represented on the FEMA/USACE generator working group that is identified as responsible for informing the proposed courses of action, it is expected that the FEMA Region III Administrator will accept the proposed report and information campaign.

The USACE Director of Contingency Operations and Homeland Security stated that USACE will welcome FEMA's support for the EPFAT program at the 2014 USACE SLS. A formal memorandum sent from the FEMA Associate Administrator and the USACE Director to the regional leadership in both agencies can provide the regions with instruction and guidance on how to conduct the information campaign, and ensure that both FEMA and USACE regional leadership understand that this initiative is a priority of their leadership at headquarters.

State and local emergency management officials are anticipated to understand that promoting the EPFAT program can benefit their constituents. As FEMA regions regularly interface with these officials, the system to approach these officials is already in place and their support in promoting the EPFAT can be requested at regularly occurring meetings between FEMA regions and these officials. As the state and local officials have regularly occurring meetings with the owners and operators of critical facilities within their jurisdictions, promoting the EPFAT should not require much effort on their behalf.

As mentioned in the policy analysis section, the owners and operators of critical facilities are likely to understand the benefit of providing the generator requirements for their critical facilities through EPFAT. However, it is anticipated that they will first ask if the federal government can provide funding for the assessments, as is done through Mission Assignments that provide disaster funding for USACE to conduct assessments of critical facilities following Presidential declarations. However, these cannot be funded when there is no Presidential declaration. Additionally, while states are aware that USACE can conduct assessments during steady-state training exercises, USACE does not have the capacity to perform assessments of all critical facilities in the Nation through these exercises. However, USACE leadership mentioned at the 2014 USACE SLS that most if not all critical facilities have qualified building managers or electricians under contract that can be utilized to conduct the assessments of their generator requirements and share those requirements through EPFAT at little to no additional cost. To encourage critical facility owners and operators to assess and share their generator requirements, it is recommended that the information campaign address these anticipated concerns regarding the cost and ability to conduct assessments in the campaign's messaging to

reassure critical facility owners and operators that it is in their best interest to assess their facilities' generator requirements and provide that information through EPFAT.

VII. RECOMMENDATION

It is recommended that FEMA produce a comprehensive report that assesses the generator program to identify the program's mission requirements stated in law and through strategic and planning guidance, and based on historical analysis as well as future risk assessments. As FEMA leadership is seeking to gain efficiencies across the Agency, and particularly in the delivery of generators, the report will provide the necessary information and context for leadership to decide on the future direction of the program. Additionally, the critical facility generator requirements collected through EPFAT, as a result of the proposed information campaign, will not only inform the comprehensive report, but will also help expedite the installation of generators at critical facilities. This recommendation should be pursued at this time for the following reasons:

Climate Change and Criticality of Power: Ensuring the resilience of critical facilities is vital as climate change assessments predict an increased frequency of severe weather that will further stress the aging energy infrastructure in the United States, and power disruption leads to cascading impacts on all sectors. Providing power to critical facilities when disasters cause significant disruption to the power grid ensures that critical facilities can service their community. As these critical facilities include medical, emergency management, and public works facilities, such as water and sewage treatment plants, providing power to critical facilities can help stabilize impacted communities and

provides communities with life sustaining services. The federal government will not have to provide these services if they can be provided by critical facilities.

Existing Systems: As the recommendation does not require changes in authorization or additional appropriations, the comprehensive report analysis and the accompanying information campaign can begin immediately. Therefore, FEMA will be able to gain efficiencies while not expending additional resources.

Disaster vs. Preparedness Funding: When power is compromised during a disaster, states may request support from the Federal government. FEMA supports this need by mission assigning USACE to conduct assessments of critical facilities and by providing generators to those facilities. The use of mission assignments is not available during steady-state operations when there is no Presidential declaration, so it is possible that SLTT governments will not inherently distinguish the resources and capabilities provided by the federal government for preparedness from the resources and capabilities available when there is an active Presidential declaration. Recognizing this, the states and counties may believe the federal government should pay for assessments to obtain generator requirements for critical facilities in advance of a disaster. However, this concern can likely be resolved through clear messaging that distinguishes preparedness funding from disaster response funding, and by following the recommended actions presented above, such as explaining the benefits of expedited installation.

Status Quo: While there has not been a failure in the ability of the federal government to provide generators to critical facilities impacted by disasters, the data shows that the program has acquired, stored, maintained, and deployed generators

without linking its efforts to accurate requirements, resulting in a 12 percent utilization rate of deployed generators. Therefore, FEMA can gain efficiencies in meeting its generator program by producing a comprehensive report that identifies more accurate requirements for the program. As these requirements will not be known until the findings of the report are released, FEMA cannot compare alternative means for delivering generator requirements without the requirements being identified.

FEMA Responds to Consequences: Additionally, while the federal government may be able to reduce the potential for power disruption by creating laws and regulations that address contributing factors to climate change or by incentivizing the hardening of critical infrastructure, FEMA is responsible for ensuring the federal government can support SLTT governments in responding to disasters. As new laws, regulations, or grant programs that may be able to help lower the risk for power disruption could take years to come into effect, if ever possible, and because the effects of any new laws, regulations, or grant programs would not be known for many years after being implemented, FEMA should pursue the recommended proposal as it addresses the consequences of the current system and factors future risk based on the current state of affairs.

By producing the proposed comprehensive report and conducting the proposed information campaign, FEMA is more likely to ascertain any adjustments that may be required to better enable the federal government to provide power to critical facilities when impacted by disasters; and with this information, FEMA and USACE can expedite the time that it takes to provide backup power to critical facilities when disasters strike. Therefore, the recommendations will significantly improve the time that it takes communities to stabilize, and therefore will improve the Nation's resilience.

Curriculum Vita

Peter Danjczek was born in Easton, Pennsylvania on July 8, 1988. He attended George Mason University, located in Fairfax, Virginia, where he earned an undergraduate degree in Government. He found his interest in policy while volunteering for local campaigns and interning in public and private sector governmental affairs offices. Upon graduation, he relocated to Washington, DC to accept a position with the Department of Homeland Security's Federal Emergency Management Agency where he currently serves as the External Affairs Advisor for the Response Directorate, the largest operational component of FEMA consisting of 26 programs and more than 700 employees. Peter has recently been accepted as a Capitol Hill Fellow with Georgetown University's Government Affairs Institute and will begin a one year detail assignment to a Congressional office in January 2015. Prior to being selected as a fellow, Peter attended Johns Hopkins University, earning a Master of Arts degree in Public Management in December 2014.